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ABSTRACT

This study was designed to determine the effectiveness of two methods of individualized instruction compared to the traditional textbook-lecture method in teaching introductory accounting courses. The two experimental class sections and the control class section involved in the study enrolled a total of 71 students. In the first individualized instruction class, students used a study guide and a textbook. In the second individualized instruction class, students used a study guide, textbook, and audio-cassette presentations of the material. Achievement gains were measured through pre- and posttests. At the end of the semester, students were asked to respond to an attitude survey and to complete a case problem which required them to apply concepts learned to a new situation. Results indicated no significant differences in achievement gains, attitudes toward accounting, or problem-solving ability. It was also found that (1) both individualized instruction methods were equally effective, (2) students' high school rank had no effect on achievement gains, attitudes, or problem solving ability, and (3) students of higher high school rank had more positive attitudes toward the course than students of lower rank regardless of the treatment experienced. A review of pertinent literature is included and the research methodology is detailed. (DC)

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A COMPARATIVE STUDY OF THE EFFECT OF THREE METHODS OF INSTRUCTION IN INTRODUCTION TO ACCOUNTING ON ACHIEVEMENT, ATTITUDE AND PROBLEM SOLVING ABILITY

JOSEPH E. BUKOWSKI

A MAJOR APPLIED RESEARCH PROJECT

PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF DOCTOR OF EDUCATION

NOVA UNIVERSITY

1976

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Abstract of a Major Applied Research Project
Presented to Nova University in Partial Fulfillment
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A COMPARATIVE STUDY OF THE EFFECT OF THREE METHODS OF INSTRUCTION IN INTRODUCTION TO ACCOUNTING ON ACHIEVEMENT, ATTITUDE AND PROBLEM SOLVING ABILITY

BY

JOSEPH E. BUKOWSKI

1976

Presently, there is much discussion centered on new instructional techniques in the introductory accounting course at the college level. These new techniques and accompanying materials have been very evident since the early 1970's. A vast array of programs exist which may be adopted in a variety of ways in the introductory accounting course. The authors and publishers of these materials contend that student learning should be greatly increased by their implementation in the classroom.

It was the purpose of this study to determine how effective two of these programs were as compared to the traditional textbook-lecture method in the introductory accounting course. It was hypothesized that students taught by the individualized method of instruction as opposed to the traditional textbook-lecture method in the introductory accounting course would demonstrate significantly greater gains in achievement, attitudes and problem-solving capabilities. It was further hypothesized

interaction of treatment and high school rank (moderator variable) with the achievement gains, attitude and problem-solving scores. Further statistical analysis in the form of a Scheffe Test was carried out to test for significant differences between ability groups.

The results of the study were that achievement gains, attitude and problem-solving ability were not significantly different when comparing the three methods of instruction. Furthermore, no significant differences between students with high academic backgrounds and students with low academic backgrounds were found for all three methods of instruction.

In summary, the findings of the study are:

1. There was no significant difference in achievement gains for students experiencing individualized instruction and traditional instruction in the initial five units of the introductory accounting course.
2. There was no significant difference in attitudes toward accounting for students experiencing individualized instruction and traditional instruction in the initial five units in the introductory accounting course.
3. There was no significant difference in students' ability to transfer concepts learned to a problem-solving situation between students experiencing individualized instruction and students experiencing traditional instruction in the initial five units in the introductory accounting course.

4. The individualized instruction method utilizing a study guide was as effective as the individualized instruction method utilizing the study guide and a multimedia program consisting of filmstrips and audio cassettes.
5. A student's high school rank had no effect on his achievement gains, attitude or problem-solving ability in both individualized instruction and in the traditional textbook-lecture method of instruction in the initial five units in the introductory accounting course.
6. Students of higher rank had more positive attitudes toward the course than students of lower rank regardless of the treatment experienced.

Therefore, the conclusion of the study was that the individualized method of instruction in the introductory accounting course is as effective as the traditional textbook-lecture method of instruction with respect to achievement gains, attitude and problem-solving ability.

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Chapter 1

INTRODUCTION

CONTEXT OF THE PROBLEM

Much research has been conducted in recent years in the area of individualized instruction. From this research, many systems of individualized instruction have evolved. The most notable of these systems being: (1) The Keller Plan (Personalized System of Instruction), (2) The Educational Products Information Exchange Institute (EPIE), (3) Programs for Learning in Accordance with Needs (PLAN), (4) Individually Guided Education (IGE), and (5) Individually Prescribed Instruction (IPI).

These systems of instruction, though not exactly alike, have one common characteristic: self-pacing for the learner. In other words, the student controls the rate at which the subject matter is presented. This places more responsibility for learning on the shoulders of the student as opposed to the instructor.

Many books and articles have been written through the years advocating a student-centered learning environment instead of a teacher-centered learning environment. Shumsky (1965, p. 17) concludes that the traditional teaching-learning process places the learner in a passive mold. Roueche and Pitman (1972) have stated that a large portion of community college students bring with them diverse learning problems which will necessitate drastic modification of the traditional learning process. They continue, by exhorting that students should be taught how to learn instead of being

treated as receptacles of knowledge. In other words, "teaching students how to learn must replace the practice of presenting set bodies of content at a fixed rate." (Roueche and Pitman, 1972, p. 22).

In other writings, Roueche concludes that learning oriented instruction must become the hallmark of the junior college. He states:

> Teachers' lectures cannot be considered synonomous with student learning if the needs of the typically heterogeneous student bodies are to be accommodated. Since junior colleges are primarily teaching institutions, they should adopt approaches to instruction that stress student learning. (Roueche, 1973, p. 205)

Much of the research conducted to date has centered on the difference in achievement demonstrated by students when they are subjected to the individualized instruction method of instruction versus the traditional textbook-lecture method of instruction. Recently, researchers have started to isolate other outcomes which may result from the instructional treatments. These other variables are: attitude toward subject, attitude toward instructional approach, and ability to transfer concepts learned to a problem solving situation.

Connolly and Sepe (1973, p. 31) surveyed students in order to determine which characteristics of the individualized methods of instruction and the traditional textbook-lecture method of instruction they preferred. Elliott and Tuckman (1973) focused their attention on the amount of time spent on studying the course materials and the amount of time spent in and success in dealing with problem solving situations. Jioia (1972) focused his attention on the preference of students for each of the modes of instruction, i.e., individualized instruction versus the traditional textbook-lecture method of instruction.

STATEMENT OF THE PROBLEM

The purpose of this study was to determine whether students enrolled in an Introduction to Accounting course: (1) show greater achievement gains; (2) demonstrate more positive attitudes toward Accounting; (3) demonstrate a greater ability to transfer concepts learned to a problem solving situation when taught by the individualized method of instruction as opposed to the traditional textbook-lecture method of instruction.

REVIEW OF THE LITERATURE

The concept of individualized instruction is not something entirely new. Various types of individualized learning have existed for centuries. Socrates demonstrated this type of learning system in some of his writings. Today, there are some colleges which are totally individualized, the most notable of which is Oakland Community College in Michigan.

When we view individualized instruction in the area of Accounting we find some innovations in the past decade. Many publishers are now devoting some of their resources to instructional materials which they feel will lead to improved teaching and ultimately improved student learning of accounting principles. These new systems incorporate audio-cassettes, film strips and individualized learning guides. Some systems employ an individualized study guide along with the textbook. Other systems employ the individualized study guide along with audio-cassettes and film strips. Systems are also available which employ the traditional textbook, individualized study guide and audio-cassettes.

These instructional packages may be employed in a variety of instructional schemes:

(1) as a supplement to class lectures,

(2) as a primary learning resource in place of lecture,

(3) as a tutorial instrument.

The present study is concerned with the effectiveness of these individualized learning materials as compared to the traditional textbook-lecture method of teaching accounting principles.

Several research studies have concluded that the individualized instruction approach to teaching is as effective as the traditional textbook-lecture method of instruction (Butts and Prickett, 1970; Jones, 1974; Elliott and Tuckman, 1973; Brooke, 1974).

Prickett and Butts (1970) compared the effectiveness of audio-tutorial and programmed instruction in the accounting principles course. Their study resulted in the following findings: (1) There was no significant difference in achievement between students experiencing the traditional instruction with a controlled laboratory experience and students receiving traditional instruction with an audio-tutorial laboratory experience. (2) There was no significant difference in achievement between students receiving traditional instruction with a controlled laboratory experience and students receiving traditional instruction with a programmed instruction laboratory experience. (3) There was no significant difference between students receiving traditional instruction with an audio-tutorial laboratory experience and students receiving traditional instruction with a programmed instruction

laboratory experience. The researchers concluded that programmed and audio-tutorial methods are equally effective in student achievement.

In her study, Brooke (1974) investigated three methods of instruction in the principles of accounting course to determine their relative effectiveness in producing achievement. The methods of instruction were: (1) conventional procedural approach, (2) the managerial approach, (3) the programmed materials approach.

The finding of the study was that there was no significant difference in achievement between the three methods of instruction at the .05 level of significance.

In a similar study (Onah, 1971), two methods of instruction, the Audio-Visual Tutorial (A.V.T.) and the conventional (lecture-discussion) were compared with respect to the effect of each method on achievement. The experiment resulted in the finding that there was no significant difference in achievement for students experiencing the Audio-Visual Tutorial method or the conventional (lecture-discussion) method. It was found that low aptitude students, as measured by the A.I.C.P.A. Orientation Test, performed better with the Audio-Visual Tutorial method as opposed to the conventional (lecture-discussion) method.

Elliott and Tuckman (1973) compared the achievement of students in the principles of accounting course on the basis of two methods of instruction, the individualized instruction method and the traditional method of instruction. The results of an analysis of variance was that there was no significant difference in achievement when comparing the individualized method of instruction and the traditional method of instruction.

In addition to the findings relative to achievement, Elliott and Tuckman found that students taught by an individualized method of instruction demonstrated significantly greater problem-solving ability. They concluded by stating that the individualized method of instruction was more effective than the traditional method of instruction in teaching accounting principles at a two-year college.

The accounting faculty at Clarion State College in Pennsylvania has been responsible for the development of one of the more prominent multimedia instructional packages. This system which is referred to as ALEX (Accounting, A Learning Experience), incorporates audio-cassettes, film strips and individualized study guides (Dupree, Marder, Carter, 1973). Testing of this system at Clarion State revealed greater achievement on the part of students enrolled in the Introductory Accounting course (Trainer, 1974) taught by the multimedia method as opposed to the past experiences using the traditional textbook-lecture method.

Similar studies have been conducted at Tarrant County Junior College in Fort Worth, Texas, Again, results of their experience indicated a greater number of students passing the course when the instructional approach included the use of the multimedia materials as opposed to the textbook-lecture method of instruction. In both the Clarion and Tarrant studies, no attempt was made to control for variables such as previous experience, age, academic ability or instructor.

In another study, Larsen (1962) divided a group of two hundred and twenty three students enrolled in their first college accounting course into three groups and subjected each group to a different instructional

treatment. Larsen found that the students receiving the extensive review and individualized instruction achieved significantly higher grades than those students who received the normal lecture or lecture-laboratory method of instruction.

Jones (1974) compared the effectiveness of audio-tutorial instruction and traditional instruction in the beginning typewriting course. Three community college classes were selected for the study. Comparing the achievement of each class, it was found that method of instruction did not produce significantly different achievement gains.

Rothstein (1973) taught half of his German class by the conventional textbook-lecture method of instruction and the other half by the individualized instruction method. The results of the study showed that a significantly greater proportion of the students taught by the individualized instruction method earned superior grades than those taught traditionally. A similar study was conducted by Teichert (1971) who also used his students studying German for the purpose of comparing individualized instruction to the conventional textbook-lecture method of instruction. He concluded that the students who received the individualized instruction treatment achieved significantly higher grades than those students who were taught using the textbook-lecture method. In addition, Teichert observed that fewer of his students in the individualized instruction section dropped the course and more students in the individualized instruction sections displayed a more positive attitude towards the subject than did those students in the textbook-lecture method section.

Some researchers have found that students experiencing the individualized instruction treatment spend significantly less time in studying without experiencing a decrease in achievement. Elliott and Tuckman (1973), as mentioned previously, found no significant difference in achievement between students subjected to individualized instruction and students subjected to the traditional textbook-lecture method of instruction. At the same time, they found that the students in the individualized instruction section spent significantly less time studying than the students in the traditional textbook-lecture section.

Bukoski (1974) found that students selecting their own instructional treatment, individualized instruction, required significantly less learning time to master a learning module as opposed to students assigned to a learning treatment, traditional in this case.

Speer (1972), in comparing individualized instruction to the traditional textbook-lecture method of instruction in accounting principles, found that the poorest students in terms of cumulative point average seemed to achieve significantly higher when subjected to the individualized instruction method as opposed to the traditional textbook-lecture method. He concluded that the reason for the difference in achievement could possibly be accounted for by the fact that the students scoring higher received more individualized attention as opposed to those students who were subjected to the traditional textbook-lecture method.

Sepe and Connolly (1972) surveyed students with respect to their preference to individualized instruction versus the traditional textbook-lecture method of instruction. Students, while rejecting the individualized

instruction method, preferred the characteristics of the individualized instruction method versus the traditional textbook-lecture method. The authors concluded that the students were probably apprehensive about accepting the responsibility for the learning situation which individualized instruction may imply. Under separate cover, the same students indicated a favorable attitude towards the attributes of the individualized instruction method versus the traditional textbook-lecture method.

Jioia (1972) studied student preferences for individualized instruction versus the traditional textbook-lecture method of instruction in a Sociology course. He concluded that students preferred the individualized instruction method because they welcomed the opportunity to work on their own and also welcomed the opportunity to have closer contact with the instructor.

In another study conducted by Connolly and Sepe (1973) the authors found that students preferring individualized instruction did so because of the self-pacing characteristic of the method. In yet another study, Onah (1971) found that the traditional textbook-lecture method of instruction was preferred significantly less than the individualized instruction method.

Tuckman and Orefice (1973) studied sixty concrete thinking and sixty abstract thinking students. Their hypothesis was proven: abstract thinking students prefer instructional situations where more responsibility and less structure are present. This conclusion lead to the Differentiated Outcome Hypothesis (Tuckman, 1985), namely that evaluative measures must have content validity in order that the results of the treatment should

be fairly judged. Siegel and Siegel (1965) support the Differentiated Outcome Hypothesis by concluding that conceptually oriented students perform better on conceptually oriented measures and factually oriented students perform better on factually oriented measures.

Several research studies have focused on the attitudes of students toward their courses after experiencing various instructional treatments.

King (1975) studied the effect of two methods of instruction in the biology course at the junior college level. The audio-tutorial and traditional methods of instruction served as the independent variable in the study. The result was that students in the audio-tutorial sections displayed significantly better attitudes toward biology than students enrolled in the traditional instruction class.

In a similar study (Andersen, 1975), student attitudes toward biology were compared with respect to modular instruction and traditional instruction. Students who enrolled in the modular biology course showed higher attitudes than did students who enrolled in the traditionally taught class.

Slate (1975) compared the effectiveness of four methods of teaching arithmetic to community college students. The methods of instruction were:

(1) self-instructional (audio-tutorial),

(2) self-instructional (audio-tutorial with one weekly meeting with the instructor),

(3) laboratory method with small group discussion with instructor,

(4) laboratory method and seminar with instructor.

He selected achievement and attitudes as the dependent measures.

Slate (1975) found that the seminar method of teaching produced significantly greater achievement gains and displayed significantly greater attitudes toward the subject.

Robinson (1974) studied achievement gains and attitudes of students experiencing traditional instruction and individualized instruction in the introductory astronomy course. While the method of instruction did not produce significantly different achievement gains, students in the traditional section displayed negative attitudes toward the subject.

STATEMENT OF THE HYPOTHESES

Hypothesis 1

Students taught by the individualized method of instruction in the Introductory Accounting course will show greater achievement gains than those students taught by the traditional textbook-lecture method of instruction with the multimedia individualized instruction method showing the greatest achievement gains.

Hypothesis 2

Students taught by the individualized method of instruction in the Introductory Accounting course will exhibit a more positive attitude toward accounting than those students taught by the traditional textbook-lecture method of instruction with the students subjected to the multi-media individualized instruction method exhibiting the most positive attitudes.

Hypothesis 3

Students taught by the individualized method of instruction in the Introductory Accounting course will demonstrate a significantly greater ability to transfer concepts to a problem-solving situation than those students taught by the traditional textbook-lecture method of instruction with the students experiencing the multimedia instruction method demonstrating the greatest ability to transfer concepts to a problem-solving situation.

Hypothesis 4

There will be no significant difference between students with high academic backgrounds and students with low academic backgrounds in both methods of individualized instruction on all three dependent variables:

(A) Achievement gains;

(B) Attitude towards Accounting:

(C) Problem-solving ability.

Hypothesis 5

There will be a significant difference between students with high academic backgrounds and students with low academic backgrounds in the traditional textbook-lecture method of instruction on all three dependent variables:

(A) Achievement gains;

(B) Attitude toward Accounting;

(C) Problem-solving ability.

RATIONALE FOR THE HYPOTHESES

Since students enter college with diverse learning abilities, it is the responsibility of educators to allow them to learn by the method which best fits their personalities and learning styles. The work of Bloom (1973) shows that ninety five percent of the students enrolled in a class should learn to a degree of mastery when taught using an individualized method of instruction. His work supports the hypothesis that no significant difference should exist between a student's previous academic background and his achievement when individualized instruction is utilized.

The purpose of the present study was to test the effectiveness of the individualized instruction method in the Introductory Accounting course. Introductory Accounting is essentially a course consisting of a logical sequence of subject matter. Mastery of each unit is essential to success in succeeding units. The traditional teaching-learning scheme does not allow for this mastery. The instructor usually determines the pacing of subject matter along with the quizzes and examinations. It is very evident that all students do not master each unit of instruction before moving on to a new unit. In fact, grading procedures in most institutions discourage mastery learning since a small number of students usually receive the grade of "A". Since this is the present state of Accounting instruction, students bring learning deficiencies with them into successive units of instruction based on the fact that they have not mastered previous units of instruction. The individualized method of instruction provides for this mastery since students control the rate at which the material is presented and also determine the appropriate time for testing.

Gibbs (1970, p. 350) states, "Mastery of initial course content is essential to further success and learning in Accounting." His solution is to substitute piecework for timework. He states, "Allow each student to master each unit before proceeding to the next unit." (Gibbs, 1970, p. 350).

Reno (1972) studied individualized instruction versus the traditional textbook-lecture methods of instruction in the Income Tax course. His conclusions were that the individualized instruction method was as effective as the traditional textbook-lecture method. In addition, he found that no significant difference existed between the ability groupings of the students and their achievement in the course.

Poor (1962) attempted to determine the differences between the successful and unsuccessful accounting students at Northern Illinois University. He concluded that the unsuccessful students had the weakest study habits of all the students. All students in this study were subjected to the same instructional treatment, that being the textbook-lecture method.

Soloman (1975) conducted a study whereby eighty two students in the Introductory Accounting course were asked to state their opinions concerning the course. In general, students displayed a negative opinion of the course. From the opinion survey, Soloman prepared an experiment whereby thirty eight of these students were divided into a control group and an experimental group. The experimental group utilized a case problem method for several of the course units. The remaining students in the control group were taught by the traditional textbook-lecture method of instruction. The results of the administered student opinionnaire showed a significant

improvement in student attitudes on several factors. A significant change in attitudes was found in the experimental group which was taught by a case problem method as opposed to the traditional textbook-lecture method. The exclusion of the traditional lecture format can be said to have caused a significant increase increase in student attitudes toward accounting principles.

OPERATIONAL DEFINITIONS OF THE VARIABLES

Independent Variable - The method of instruction: Individualized Instruction versus the Traditional Textbook-Lecture method.

A. Individualized Instruction I (Study Guide) - Students utilized the course text along with the Individual Study Guide. The guide contains objectives for each unit in the course along with questions, exercises and problems. Students were required to attend class. Lectures were not utilized. Students were free to work alone or in groups.

B. Individualized Instruction II (Multimedia) - Students utilized the course text along with the Individual Study Guide. In addition to the text and the guide, students had access to audio-visual materials in the form of a multimedia accounting program consisting of audio-cassettes and film strips. The multimedia package was available during class periods as well as being available in the library for use outside class. Students were required to attend class at which time they could choose to work alone or in groups. They could choose to work on the individual

units and/or utilize the audio-cassettes and film strips. The instructor, who had responsibility for both experimental groups and the control group, was in attendance at all class sessions to assist students and also to administer unit quizzes and the major examination.

C. Traditional Textbook-Lecture Method - Students attended class regularly during which the course material was presented by the instructor. In addition, the instructor reviewed questions, exercises and problems.

Dependent Variables - The dependent variables were: (1) Achievement gains, (2) Attitudes toward accounting (3) Problem-solving ability.

Achievement gains were determined by computing the difference between the pretest scores of Accounting and the posttest scores of Accounting. Attitudes relate to the responses received from students toward Accounting. These attitudes were determined by administering a survey upon completion of the final unit of study. The survey appears in the Appendix. Problem-solving ability was determined by the assignment of a case problem which required students to search for solutions and to seek resources which go beyond the concepts studied in the course.

Moderator Variable - Academic ability was a moderator variable in the study, defined as high school graduating rank. This was expected to serve as an indicator of previous academic background.

Control Variable - The control variable was prior knowledge of accounting defined as the score achieved on the pretest of Accounting.

OPERATIONAL RESTATEMENT OF THE HYPOTHESES

It was hypothesized that in Introduction to Accounting: (a) students who are given objectives, allowed to work at their own pace, allowed to work alone or in groups, allowed to view film strips and listen to audio-cassettes and receive individual attention from the instructor, would demonstrate greater achievement gains than those students who listen to lectures, solve problems and exercises, and who participate in discussions of problems and exercises; (b) students who are exposed to the individualized instruction method will display significantly more positive attitudes toward accounting than students exposed to the traditional textbook-lecture method of instruction, (c) students who are taught by the individualized instruction method will demonstrate a significantly greater ability to transfer concepts to a problem-solving situation than those students exposed to the traditional textbook-lecture method of instruction. In addition, it was hypothesized that the multimedia individualized instruction method would prove to be more effective in student achievement, foster more positive attitudes toward accounting and prepare students more adequately to transfer concepts to problem-solving situations. It was also hypothesized that a student's previous academic background would influence his achievement in Introductory Accounting when exposed to the traditional textbook-lecture method of instruction while his previous academic background would not influence his achievement when exposed to both methods of individualized instruction, the study guide method and the multimedia method.

SIGNIFICANCE OF THE STUDY

Students in junior/community colleges have characteristics which distinguish them from their counterparts in senior colleges. Studies have indicated that these students are typically low achievers and have less motivation than students in senior colleges. Why then, in spite of this evidence, do we continue to treat junior/community college students as senior college students? Why do we continue to use the lecture method of instruction? Why do junior/community college instructors not make more use of behaviorally stated objectives and methods of instruction which will better suit our type of clients? Could one reason be that as instructors we are afraid of revealing that the instructor is not the critical variable in student achievement? Could it be that there are other more critical variables which influence achievement?

Tarrant County Junior College in Fort Worth, Texas has experimented with the multimedia accounting package called ALEX. Their experience showed a marked improvement in student achievement from 1971 to 1975. They state:

> Using ALEX we have experienced a lower withdrawal rate with a corresponding increase in the percentage of grades in the A, B and C range in Principles of Accounting I course. Grissom, 1975)

As mentioned previously, several professors at Clarion State College in Pennsylvania are responsible for the development of the multimedia accounting package (Dupree, Marder, Carter, 1973). Professor Dempsey Dupree makes the following comments:

> Professor Bukowski, I shall be very much interested in the outcome of your comparative study. There have been very few efforts to do statistically valid comparisons, mostly because it is so difficult to pin down and control variables such as variations in instructor and student abilities, backgrounds, etc. [1].

Becker Junior College is presently reviewing the instructional methods with the expectation of implementing a system of individualized instruction in the future. The department of English has plans to offer a course in Rhetoric on an individualized basis.

The present study will provide valuable information concerning the feasibility of implementing a system of individualized instruction in the accounting curriculum.

---

[1] Based on personal correspondence between Dr. Dempsey Dupree, Professor of Accounting at Clarion State College, and the writer.

Chapter 2

METHODS

SUBJECTS

The study utilized seventy-one students enrolled in Introduction to Accounting (Accounting 10) at Becker Junior College. Three intact groups were used. Students were afforded the opportunity to enroll in any of the three sections, thus preventing random assignment of students to each of the sections. The instructional treatment, however, was determined on a random basis (although this alone cannot be considered a sufficient basis to control for selection threats to internal validity).

Of the seventy-one students involved in the study, seventy were female students. The female students were enrolled in three programs: Medical Assistant, Medical Secretary and Executive Secretary. The male student was enrolled in the Business Administration program.

All Ss were members of the freshman class. Ages ranged from seventeen years to nineteen years.

In second semester of each academic year it is necessary to offer at least three sections of introductory accounting. Students are allowed to enroll in whatever section best suits their schedule. Therefore, systematic assignment on the basis of high school graduating rank (moderator variable) was not possible.

The following procedures were followed in dividing each class by ability groups:

(1) S's high school graduating rank was obtained from his/her personal file.

(2) Ranks for all Ss were arranged from highest to lowest.

(3) The median rank was determined and was used as the dividing point between high and low ranking.

(4) Students in each of the classes were designated as fitting into the high ability category (above the total sample median) or a low ability category (below the median).

To insure that the ability groupings in each of the three classes were equal a Chi-Square test was run. Table 1 shows the results of the Chi-Square test conducted on the high and low ability categories in each class. The total Chi-Square obtained was 3.97388. This value was not significant at the five percent level of confidence. Thus, the conclusion reached was that the distributions were equivalent.

TASKS

Ss met for two and one half hours per week. At the first class meeting a pretest was administered to all three sections. The same instrument was administered to the students at the end of the semester and served as the posttest. In addition, at the end of the semester, students were asked to respond to an attitude survey and were also assigned a case problem which required demonstration of the students'

Table 1
Chi-Square Table For Method of Instruction
and High/Low Ability Categories

Method of Instruction		HIGH	LOW	TOTALS
Individualized (Multimedia)	f_o	12.00	14.00	26.00
	f_e	12.82	13.18	26.00
	x^2	0.05	0.05	0.10
Individualized (Study Guide)	f_o	14.00	7.00	21.00
	f_e	10.35	10.65	21.00
	x^2	1.29	1.25	2.54
Traditional	f_o	9.00	15.00	24.00
	f_e	11.83	12.17	24.00
	x^2	0.68	0.66	1.34
TOTALS	f_o	35.00	36.00	71.00
	f_e	35.00	36.00	71.00
	x^2	35.00	1.96	3.97

f_o - observed frequency f_e - expected frequency x^2 - cell chi-square

Total x^2 - 3.97388 1 DF
x^2 (.05 level) - 6.00

problem-solving ability. All experimental groups (individualized instruction) received objectives for each of the five units of the study which are listed below:

(1) Introduction to Accounting

A. Basic accounting equation
B. Analyzing business transactions
C. Nature of financial statements

(2) Setting up accounting

A. Debit and Credit mechanism
B. Real and nominal accounts
C. The chart of accounts

(3) Journalizing and posting

A. Recording entries in the general journal
B. Posting entries to the ledger

(4) Trial balance and worksheet

A. Balancing of accounts
B. Nature of the trial balance
C. Completing the worksheet

(5) Closing the books

A. Income and expense summary
B. Preparing closing entries

VARIABLES

1. Independent Variable - The independent variable consisted of the contrast of an individualized method of instruction to the traditional textbook-lecture method of instruction of teaching the Introduction to Accounting course.

Ss enrolled in the experimental groups received one of two treatments:

(a) Individualized instruction utilizing the Individual Performance

Guide which accompanies the text used in the course. The Individual Performance Guide contains specific objectives for the units along with reading assignments for the units. In addition, the guide provides questions, exercises and problems to which the students are expected to prepare solutions. Students were allowed to work alone or in groups. The instructor gave detailed instructions during the initial class. These instructions pertained to the procedure to follow to obtain help and the procedure to employ when the students elected to be quizzed. The instructor was present during all class meetings to work with students on an individual basis. Lectures were not used. Students determined the pace at which the material was covered.

(b) Individualized instruction utilizing a multimedia format. This method allowed the student the opportunity to listen to audio-cassette presentations of the subject matter as well as view film strips which illustrated the subject matter. The audio-cassettes were available to the students during each class period as well as other hours at which time they were available in the library. The course text as well as the Individual Performance Guide were utilized in the multimedia individualized instruction experimental group.

Ss enrolled in the control group attended class regularly as did Ss enrolled in the experimental groups. The control group was taught using the traditional textbook-lecture method of instruction. Ss attended lectures given by the instructor, prepared solutions to questions,

exercises and problems, and participated in discussions of the material. The instructor determined the pace of the subject matter as well as the dates for the administration of quizzes and the examinations.

2. Moderator Variable - The moderator variable in the study was the Ss high school rank. This information was taken from student records. On the basis of it, the total groups of Ss were divided at the median rank to identify Ss of high rank and those of low rank within each condition.

Table 2 shows the median high school rank for each of the three methods of instruction by high and low high school rank. High school ranks were computed by dividing each students rank by the total class population.

Table 2

Median High School Rank By Method of Instruction and Ability Categories

METHOD OF INSTRUCTION	N	HIGH SCHOOL RANK		MEAN
		HIGH	LOW	
Individualized Instruction (Multimedia)	26	.2414	.6207	.3704
Individualized Instruction (Study Guide)	21	.2378	.5455	.3060
Traditional	24	.2667	.5629	.4600
MEAN	71	.2414	.5629	

The high school rank for the population ranged from .0263 to .9333.

3. Control Variable - The control variable in the study was the scores achieved on the pretest of Accounting.

4. Dependent Variables - The dependent variables were Ss (1) achievement gains between the pretest and the posttest, (2) scores on the attitude survey administered upon completion of the instructional units, and (3) scores on the case problem which was designed to compare problem-solving abilities of Ss exposed to individualized instruction versus the traditional textbook-lecture method of instruction.

All Ss were administered the same achievement, attitude and problem-solving tests. Achievement was determined by computing the difference between the pretest scores and posttest scores. The publisher's test was utilized as the pretest and posttest instruments. Content validity was determined by mapping out test items and matching these test items to the appropriate learning objective(s) from the study guide.

The following steps were taken to determine content validity of the pretest and posttest instrument:

(1) Learning objectives for each of the five units were taken from the Individualized Study Guide. The master list of objectives is contained in the Appendix of this study.

(2) Each learning objective was reveiwed by the writer and assigned either a high or a low priority.

(3) Each test item was matched to the particular learning objective(s) by indicating the appropriate relative weight of the test item.

(4) Learning objectives were divided into high and low priority and the total relative weight assigned to high priority objectives and low priority objectives was determined.

Table 3 is presented to show the distribution of the relative weight of each test item. The following observations are made:

(1) Of the twenty-seven learning objectives, eighteen (66 2/3%) were considered high priority and nine (33 1/3%) were considered low priority.

(2) Of the eighteen high priority learning objectives, six objectives were not represented in the publisher's examination.

(3) High priority learning objectives accounted for eighty-eight percent of the relative weight and low priority learning objectives accounted for eleven percent of the relative weight. One test item, one percent of the relative weight, did not relate to any of the learning objectives.

The reliability of the posttest was prepared by arranging the test items from the examination in a numerical sequence. The posttest contained a total of seventy items. Students received no partial credit on any of the seventy items.

Reliability of the posttest was determined by the Kuder-Richardson Formula 20 (Tuckman, 1972). This formula produced a reliability coefficient of .91.

Table 3
Distribution of Relative Weight of Posttest Items

TEST ITEMS

RELATIVE WEIGHTS

Learning Objectives	Priority	PART I True/False	PART II Worksheet/ Closing Entries Financial Statements	PART III Capital Balances	PART IV Entries	PART V Questions	Totals
1.	H	0					0
2.	L	4%					4%
3.	H	0					0
4.	H	1%		5%		10%	16%
5.	H	10%	10%				10%*
6.	H	1%	10%				10%*
							1%
7.	H	0					0
8.	H	0					0
9.	L	0					0
10.	L	0					0
11.	H	0			20%		20%*
12.	H	2%					2%
13.	L	0					0
14.	H	0	20%*				20%*
15.	H	3%					3%
16.	H	0					0
17.	1	1%					1%
18.	H	0					0
19.	H	1%					1%
20.	L	1%					1%
21.	H	2%	15%				17%
22.	H	0	20%				20%
23.	H	2%	6%				8%
24.	H	0	4%				4%
25.	L	1%					1%
26.	L	0					0
27.	L	0					0
Totals		19%	45%	5%	20%	10%	99%

*Objectives 5,6,11,14,22 are identical. Therefore, Part II measures all of the objectives. Those marked with astericks are not counted in the total since they are represented in objective number 22.

PRIORITY = H - HIGH
L - LOW

In addition to the Kuder-Richardson Reliability, a random sample of sixteen posttest examination (22.5%) was selected. These examinations were submitted to another accounting instructor who was asked to grade the tests according to the grading weights assigned by the original instructor. The original scores were correlated with the scores obtained by the alternate instructor. This process yielded a correlation coefficient of .86.

Ss attitudes were examined by means of an attitude survey constructed by the writer. The survey consisted of ten questions concerning the course to which the student was asked to indicate his attitude ranging from very favorable to very unfavorable. This instrument is contained in Appendix A. To determine reliability, a Split-Half Reliability Test (Tuckman, 1972) was conducted. The coefficient was corrected by the Spearman-Brown Formula (Tuckman, 1972). This test yielded a reliability coefficient of .85.

The problem-solving ability of the Ss was examined by the assignment of a case problem upon completion of the fifth instructional unit. This case problem required the student to apply concepts learned in the course to a situation which was entirely new. The case problem required Ss to establish an accounting system for a newly formed partnership. The novelty of this assignment was due to the fact that Ss were not exposed to the partnership form of business in the initial five units of the course. Concepts learned in the initial five instructional units provided the Ss with adequate background to prepare a solution to the case problem.

The case problem, as mentioned previously, was based on the partnership form of business. The main intent of this case was to have students seek out resources beyond the scope of the classroom. Thirty-seven separate items were contained in the case, with many of different relative weights. Those entries and financial statements which required the seeking of resources were weighted more heavily than the items which students had experienced in class. The total point value of the case problem was one hundred points.

Content validity of the case problem was provided for by subjecting it to close scrutiny by other members of the accounting staff.

Reliability of the case problem was determined by the Kuder-Richardson Formula 20 (Tuckman, 1972). The thirty-seven items in the case were listed and each student's correct or incorrect response was noted. This formula produced a reliability coefficient of .98. In addition to the Kuder-Richardson reliability, the case problems were subjected to an additional correction by an alternate instructor. A random sample of fifteen case problems was selected. Correlating the original grades with the grades determined by the alternate instructor produced a correlation coefficient of .99.

PROCEDURES

Achievement tests were administered to all students at the initial class meeting. The instructor explained that the test was for informational purposes only and would not be a factor in grading.

Ss enrolled in the control group were informed about the required

text for the course along with the required assignments. Ss enrolled in the experimental groups received detailed instructions concerning the format of the course. In addition, Ss enrolled in the experimental group received a booklet explaining the procedures to follow during the five units of instruction.

The instructor determined the pace which the control group maintained. He scheduled reading assignments, exercise assignments and problem assignments. In turn, he scheduled the unit quizzes and the comprehensive examination (posttest) when he felt Ss were adequately prepared.

In the experimental groups, the instructor was in attendance at all class meetings. However, Ss worked alone or in groups without receiving formal lectures. The instructor was available to Ss for the purpose of reviewing assignments, explaining material, administering unit quizzes and administering the comprehensive examination (posttest). The student determined the appropriate time to take the unit quizzes and the comprehensive examination (posttest).

In the second individualized instruction section (multimedia) Ss were allowed to use the multi-media accounting package at will. The audio-cassettes and film strips for each of the five units were available in each of the class meetings. The audio-cassettes and the film strips were also available in the library for use outside of the assigned class period.

Upon completion of the fifth unit of study each student was given a case problem assignement. This case problem, designed to test Ss problem solving ability, was prepared out of class. A one-week period was allotted for the preparation.

The attitude survey was administered upon the completion of the fifth unit of study. This attitude survey was administered following the comprehensive examination (posttest).

All classes were taught by the same instructor.

DATA ANALYSIS

A 3 x 2 analysis of variance was conducted to determine if significant differences existed in each of the classes experiencing three different methods of instruction on each of the dependent variables: achievement gains, attitude scores, problem-solving scores. This same analysis of variance was also used to evaluate the effects of high and low ability categories.

In addition to the analysis of variance, a Schefeé Test (Snedecor, 1967) was conducted on mean scores determined to be significantly different based on the analysis of variance.

The design of the study was quasi-experimental and is diagrammed as follows:

$O_1 \quad X_1 \quad Y_1 \quad O_2$

$O_3 \quad X_2 \quad Y_1 \quad O_4$

$O_5 \qquad\qquad Y_1 \quad O_6$

$O_7 \quad X_1 \quad Y_2 \quad O_8$

$O_9 \quad X_2 \quad Y_2 \quad O_{10}$

$O_{11} \qquad\qquad Y_2 \quad O$

where O_1, O_3, O_5, O_9, and O_{11} represent observed scores on the pretest of Accounting. O_2, O_4, O_6, O_8, O_{10}, and O_{12} represent observed scores on the posttest of Accounting, or scores on the attitude scale, or scores on the case problem. X_1 and X_2 represent the treatment groups. Y_1 and Y_2 represent the levels of the moderator variable, high school rank (above the median rank for the group versus below the median rank for the group.

CHAPTER 3

RESULTS OF THE STUDY

The hypotheses tested in the study have implications for hundreds of students who enroll in introductory accounting courses each year. In this section of the study, the data obtained on achievement gains, attitude and problem-solving ability are presented. Tests of significance were used to compare the data gathered.

Hypotheses are accepted or rejected at the five percent level of confidence. At the five percent level of confidence, accepting or rejecting a hypothesis means that if differences occur they would not occur by chance more than five times out of one hundred.

Hypothesis One

It was hypothesized in hypothesis one that students taught by the individualized method of instruction in the introductory accounting course would show greater achievement gains than those students taught by the traditional textbook-lecture method of instruction with the multimedia individualized instruction method showing the greatest achievement gains.

Tables 4 and 5 contain the mean achievement on the pretest and the posttest respectively. It is not uncommon to find pretest scores of zero, since most of the students had no previous accounting or bookkeeping exposure. Those students who did have some bookkeeping knowledge were by chance enrolled in the traditional treatment group. A total of seven students earned points on the pretest ranging from ten points to

forty six points. Therefore, the relative size of the achievement gains should not be alarming since the starting point in practically all cases was zero.

Table 4
Pretest Achievement by Ability Category

Method	N	High (N=35)	Low (N=36)	Mean
Individualized(Multimedia)	26	0	0	0
Individualized(Study Guide)	21	0	0	0
Traditional	24	9.67	3.41	6.17
Mean	71	2.49	1.70	

Table 5
Posttest Achievement by Ability Category

Method	N	High (N=35)	Low (N=36)	Mean
Individualized(Multimedia)	26	87.83	82.36	85.06
Individualized(Study Guide)	21	86.29	84.43	84.02
Traditional	24	89.81	81.46	85.58
Mean	71	85.72	82.38	

Table 6 shows the results of an analysis of variance used to compare achievement gains of students taught by the three methods of instruction. The F value obtained was 2.47891. The F value required to achieve significance was 3.14.

Table 6
Analysis of Variance of Achievement Gains
by Method of Instruction and high School Graduating Rank

Source	df	MS	F
Method	2	569.535	2.47891
Rank	1	401.7704	1.74871
Method X Rank	2	41.02906	.1784
Error	65	229.75292	

Table 7 indicates the mean achievement gains for students in each of the three methods of instruction. Students enrolled in the individualized instruction section utilizing media showed a mean achievement gain of 84.88, students enrolled in the individualized instruction section utilizing only the study guide showed a mean achievement gain of 85.67, while the students in the traditional textbook-lecture section had a mean achievement gain of 75.54.

Hypothesis one is therefore rejected, indicating that the mean achievement gains for each of the methods of instruction did not differ at the .05 level of significance.

Table 7
Achievement Gains by Method of Instruction

Method	N	Mean
Individualized(Multimedia)	26	84.88
Individualized(Study Guide)	21	85.67
Traditional	24	75.54
Mean	71	81.96

Hypothesis Two

The second hypothesis in the study stated that students taught by the individualized method of instruction would exhibit more positive attitudes toward accounting than those students taught by the traditional textbook-lecture method of instruction. In addition, it was hypothesized that students taught by the multimedia individualized instruction method would display more positive attitudes toward accounting than those students taught by the individualized instruction method utilizing the study guide only.

An analysis of variance was used to analyze the difference in mean attitudes displayed by students in each of the methods of instruction. Table 8 shows the results of this analysis of variance. The F value obtained was 0.96905. The F value which would have had to be obtained in order to achieve significance was 3.14.

Table 8
Analysis of Variance of Attitude Scores
by Method of Instruction and High School Graduating Rank

Source	df	MS	F
Method	2	33.1589	.96905
Rank	1	397.8218	11.62617*
Method x Rank	2	23.7606	0.69439
Error	65	34.2177	

*p <.001

The mean attitude scores for students in the three sections are shown in Table 9. The attitude scale ranged from 10 (negative) to 50 (positive).

Table 9
Attitude Scores by Method of Instruction

Method	N	Mean
Individualized(Multimedia)	26	36.5
Individualized(Study Guide	21	35.2381
Traditional	24	36.2917
Mean	71	36.0563

Students in the individualized instruction section utilizing multimedia displayed a mean attitude of 36.5 while students in the individualized instruction section utilizing the study guide only had a mean attitude of 35.24. The students in the traditional section showed a mean attitude of 36.29. The table indicates how close to one another the attitude scores were.

Since the F value required to produce significance was not achieved, the hypothesis was rejected. Students displayed similar attitudes toward accounting regardless of the method of instruction.

The analysis of variance did produce a significant rank effect. This significance will be addressed in the pages to follow.

Hypothesis Three

Hypothesis three indicated that students taught by individualized instruction would demonstrate a significantly greater ability to transfer concepts to a problem-solving situation than those students taught by the traditional textbook-lecture method of instruction with students in the individualized section utilizing multimedia demonstrating the greatest problem-solving ability.

Table 10 presents the results of an analysis of variance used to compare the mean problem-solving scores by students taught by the three methods of instruction. The F value obtained was 1.14372. This value did not exceed the critical value of 3.14 required to produce significance.

The mean problem-solving scores are shown in Table 11. Students experiencing the individualized instruction with multimedia earned a

mean problem-solving score of 40.65, while students utilizing the study guide only earned a mean problem-solving score of 30.10. At the same time, the students being taught by the traditional textbook-lecture method earned a mean problem-solving score of 28.42.

Table 10
Analysis of Variance of Problem-Solving Scores
by Method of Instruction and High School Graduating Rank

Source	df	MS	F
Method	2	1000.3031	1.14372
Rank	1	608.3953	.69562
Method x Rank	2	73.3342	.08385
Error	65	874.6044	

Table 11
Problem-Solving Scores by Method of Instruction

Method	N	Mean
Individualized(Multimedia)	26	40.65
Individualized(Study Guide)	21	30.10
Traditional	24	28.42
Mean	71	33.40

As was noted, the mean problem-solving scores of the Ss enrolled in the multimedia treatment group was 40.65 while the Ss enrolled in the traditional treatment group earned a mean score of 28.42. The difference between these means was analyzed further by using a Scheffe Test (Snedecor, 1967). The test statistic generated was 1.4096. It did not exceed the critical value of 4.4665 needed to achieve significance.

Based on the analysis of variance and the Scheffe Test, hypothesis three is rejected. There is no significant difference in problem-solving ability demonstrated by students taught by the individualized method of instruction as opposed to the traditional textbook-lecture method of instruction.

The nonsignificance of the problem-solving scores may be explained by the wide variance in the individual scores obtained. The range of scores was from zero to one hundred. Fourteen students received a grade of zero on the case problem assignment while eight students earned a perfect score of one hundred. This wide variance is a definite contributor to the nonsignificant difference in the mean scores.

Hypothesis Four

It was stated in hypothesis four that there would be no significant difference between students with high academic backgrounds and students with low academic backgrounds for the students experiencing each method of individualized instruction for all three dependent variables: achievement gains, attitude and problem-solving ability.

In Table 6 the results of an analysis of variance of achievement gains by method of high school graduating rank were presented. The F value obtained as .1784. This value did not exceed the value of 3.14 required for significance.

Achievement gains by method of instruction and high school rank are presented in Table 12.

Table 12
Achievement Gains by Method of Instruction and Ability Category

Method	N	High (N=35)	Low (N=36)	Mean
Individualized(Multimedia)	26	87.83	82.36	84.88
Individualized(Study Guide)	21	86.29	84.43	85.67
Traditional	24	80.22	72.73	75.54
Mean	71	85.26	78.75	

Table 8 shows the results of an analysis of variance of attitude scores by method of instruction and high school rank. The F value generated was .69439. This value did not exceed the critical value needed to achieve significance. The critical value again being 3.14.

The attitude scores by method of instruction and high school rank are contained in Table 13.

Table 13
Attitude Scores by Method of Instruction
and Ability Category

Method	N	High (N=35)	Low (N=36)	Mean
Individualized(Multimedia)	26	39.0	34.36	36.50
Individualized(Study Guide	21	36.21	33.29	35.24
Traditional	24	40.78	33.60	36.29
Mean	71	38.34	33.83	

The results of an analysis of variance of problem-solving scores by method of instruction and high school rank are presented in Table 10. The F value obtained was .08385. Again, this F value did not exceed the critical value of 3.14 needed to produce significance.

The problem solving scores by method of instruction and high school graduating rank are shown in Table 14.

In order to further test the difference between achievement gains, attitude scores and problem solving scores by method of instruction and high school rank, Scheffé Tests were run on the means of each of the dependent variables according to ability categories and by the two separate methods of individualized instruction. Table 15 shows the values obtained on each of the Scheffé Tests run. None of the test statistics produced exceeded the critical value of 4.4665 needed to achieve significance.

Table 14
Problem-Solving Scores by Method of Instruction
and Ability Category

Method	N	High (N=35)	Low (N=36)	Mean
Individualized(Multimedia)	26	44.17	37.64	40.65
Individualized(Study Guide)	21	30.79	28.71	30.10
Traditional	24	34.44	24.80	28.42
Mean	71	36.31	30.56	

Table 15
Scheffé Test on Dependent Variables by High School Rank
for Individualized Method of Instruction

Dependent Variables	Method	
	Multimedia	Study Guide
Achievement Gains	.8348	.2646
Attitude	2.9103	1.0821
Problem-Solving	.5607	.4864

Critical Value = 4.4665

Therefore, hypothesis four A, hypothesis four B and hypothesis four C are all accepted indicating that for both methods of individualized instruction no significant difference was demonstrated with respect to achievement gains, attitudes toward accounting and problem-solving abilities between students with high school rank classified as high (above the median for the population) and students with low high school ranks (below the median of the population).

Hypothesis Five

Hypothesis five stipulated that students with high academic backgrounds would differ significantly from students with low academic backgrounds on all three dependent variables: achievement gains, attitudes toward accounting, and problem-solving ability for the traditional textbook-lecture treatment group.

The results of an analysis of variance mentioned previously conducted by ability categories on achievement gains is shown in Table 6. The resulting F value was .1784. This value was not significant at the five percent level of confidence since it did not exceed the required value of 3.14. In Table 7 the mean achievement gains by ability categories are presented. The students with the high academic backgrounds had a mean achievement gain of 80.22 while the students with low academic backgrounds had a mean achievement gain of 72.73.

The analysis of variance on attitude scores by high school rank is presented in Table 8. The value obtained was .69439. This value did not exceed the value required to achieve significance which was 3.14. The

mean attitude scores for each group are presented in Table 13. In the traditional instruction section students of the high ability category had a mean attitude score of 40.78 while the students of the low ability category had a mean attitude score of 33.60.

The final hypothesis was concerned with the significant difference in problem-solving ability displayed by students of high and low ability categories. Again, an analysis of variance was run. This F value was .08385. The F value did not exceed the critical value of 3.14. Mean problem solving scores by ability category are shown in Table 14. The students with high academic backgrounds had a mean problem solving score of 34.44, while the students with low academic backgrounds had a mean problem-solving score of 24.80.

To analyze the differences on all three dependent variables by ability category, Scheffé Tests were run. The results of the Scheffé Tests are shown in Table 16.

Table 16
Scheffe Tests on Dependent Variables by High School Rank
for Traditional Method of Instruction

Dependent Variable	Test Statistic
Achievement Gains	1.1717
Attitude	2.9103
Problem-Solving	.7739

Critical Value = 4.4665

None of the test statistics produced from the Scheffe Test exceeded the critical value of 4.4665 need to produce significance. Therefore, hypothesis five A, hypothesis five B and hypothesis five C are all rejected. The traditional method of instruction did not produce significantly different achievement gains, attitudes toward accounting or problem-solving abilities with respect to students within a high category of high school rank and students within a low category of high school rank.

Main Effect of Rank

Although the main effect of rank upon the dependent variables was not an element of the study, it is interesting to note the results of the analysis of variance showing this main effect upon each of the dependent measures. The main effect of rank upon achievement produced an F ratio of 1.74871. This F ratio was not significant at the .05 level of confidence. The F ratio produced with respect to the main effect of rank upon attitude was 11.62617. This F ratio was highly significant at the .05 level. The F ratio resulting from the main effect of rank upon the problem-solving scores was .69562. This F ratio was not significant at the .05 level of confidence.

With respect to the main effect of rank, it was found that students of high school rank demonstrated significantly more positive attitudes toward accounting than did students of low high school rank. There was no significant difference in achievement gains or problem-solving abilities demonstrated by students of high academic backgrounds as opposed to students of low academic backgrounds.

CHAPTER 4

CONCLUSIONS, INTERPRETATIONS AND RECOMMENDATIONS

Conclusions and interpretations are presented to aid in the process of evaluating the effectiveness of individualized instruction in the accounting curriculum.

Findings

The findings of the study are:

1. There was no significant difference in achievement gains for students experiencing individualized instruction in the initial five units of the introductory accounting course.
2. There was no significant difference in attitude toward accounting for students experiencing individualized instruction and traditional instruction in the initial five units of the introductory accounting course.
3. There was no significant difference in students' ability to transfer concepts learned to a problem-solving situation between students experiencing individualized instruction and students experiencing traditional instruction in the initial five units in the introductory accounting course.
4. The individualized instruction method utilizing a study guide was as effective as the individualized instruction method utilizing the study guide and a multimedia program consisting of film strips and audio cassettes.

5. A student's high school rank had no effect on his achievement gains, attitude or problem solving ability in both individualized instruction and in the traditional textbook-lecture method of instruction in the initial five units in the introductory accounting course.
6. Students of higher rank had more positive attitudes toward the course than students of lower rank regardless of the treatment experienced.

To summarize the findings of the study, it was found that the individualized method of instruction in the initial five units of the introductory accounting course was as effective as the tradtional textbook-lecture method of instruction with respect to students' achievement gains, students' attitudes toward accounting, and students' problem-solving abilities. In addition, it was found that the use of the multimedia accounting program as a supplement to the textbook and study guide did not produce significantly greater achievement gains, attitudes, or problem-solving abilities.

Interpretations

Based on the results of the study, the purpose of this portion of the study is to explore these results in an attempt to isolate factors which may have had some bearing on the results.

Individualized Instruction in Accounting. Overwhelming evidence exists which supports the results of this study, i.e., no significant difference

between individualized instruction and traditional instruction with respect to achievement in the introductory accounting course (Butts and Prickett, 1971; Jones, 1974; Elliott and Tuckman, 1973; Brook e, 1974).

A recent study conducted at Kansas State University (Laughlin, Gentry and May, 1976) focused on the effectiveness of the multimedia approach in the teaching of accounting principles as opposed to the traditional textbook-lecture method of teaching the course. One hundred and eighty students were randomly assigned to one of three sections: (1) Audio-Visual I, (2) Lecture and (3) Audio-Visual II. Students in the Audio-Visual sections utilized a synchronized filmstrip and audio cassette instructional system (Curry and Frame, 1973) in place of the lecture. Students were allowed to pace themselves. Students in the traditional section attended lectures and prepared problem assignments which were reviewed in class. The results of the study indicated that there was no significant difference in achievement demonstrated by students in the Audio-Visual sections. In addition, the researchers found that students' past performance, as measured by cumulative grade point average, was a better predictor of performance in the Audio-Visual sections as opposed to the traditional section.

Effect of Moderator Variable. The moderator variable that was used in the study was high school rank which was indicative of Ss previous academic background. Ss were assigned to either a high or a low ability grouping based on the median high school rankings of the population.

Statistical tests conducted on the moderator variable did not indicate a significant interaction with any of the three methods of instruction in the study.

When attempting to explain the reason for high school graduating rank not having a significant effect upon achievement, attitude and problem-solving ability relative to the teatments, one is reminded that the college environment in many respects is much different from that of the secondary school. Students usually attend college as a matter of choice and would therefore have more motivation toward their studies in general. Another possibility exists with respect to variations in instructor effectiveness. It appears to be difficult, if not impossible, to isolate factors pertaining to individual instructors which make them effective teachers for all students regardless of prior academic ranking or I.Q.

If one is to assume that the traditional textbook-lecture method of instruction is not as effective for students of lower abilities as opposed to higher abilities as some researchers have pointed out (Roueche and Pitman, 1972; Bloom, 1973; Herrscher, 1971), research should be undertaken to prove this assumption. The research to date in accounting is not conclusive on this point.

Attitudes displayed by students did not differ significantly with respect to treatment groups. This may be interpreted as meaning that the discipline of accounting interests students by its very nature regardless of the method of instruction. It should be reiterated that none of

ot the students enrolled in the course had intentions of majoring in accounting. Therefore, each section was similar with respect to career goals, i. e. medical assistants, medical secretaries and executive secretaries.

The problem-solving abilities demonstrated by students also did not differ significantly with respect to treatment. Students displayed similar problem-solving abilities regardless of previous academic background. These results are not consistent with the findings of Elliott and Tuckman (1973) whereby students experiencing individualized instruction demonstrated significantly greater problem-solving abilities than those students experiencing the traditional method of instruction.

A wide variation exists with respect to instructors teaching the accounting principles course. Some instructors are well grounded in educational methods while others are subject matter oriented. This variation is difficult to control for and thus may be responsible for the conflicting research results. The mere definition of individualized instruction suggests interpretations. It has been suggested that individualized instruction may lead to abuses by those faculty who are unaware of the implications of an individualized course of study. A second explanation for the nonsignificance of the difference in the problem-solving scores is the variation in the actual scores obtained.

Recommendations

The recommendations of the study are based on the finding that students taught by individualized instruction versus traditional instruction

in the introductory accounting course do not demonstrate significantly different achievement gains, attitudes and problem-solving abilities. The recommendations of this study are aimed at the faculty and administration of Becker Junior College.

Initially, the results of this study should be distributed to the Dean of Instruction and Department Chairpersons. Becker Junior College is presently undertaking a revision of several courses whereby an individualized instruction approach will be utilized. It is hoped that the results of this study will be utilized in planning the implementation of individualized instruction and in particular the appropriation of resources for individualized instruction.

The second recommendation is that the results of this study be reviewed prior to embarking on further individualized instructional programs at Becker Junior College. Since private institutions have limited financial resources, it is imperative that the potential impact of an individualized instruction program be determined prior to implementing such a system. The cost of individualizing a course or a curriculum can be excessive. Granted, lecture time is greatly reduced thereby providing instructors with more time to diagnose student difficulties and to prescribe remedial procedures. At the same time, though, the record keeping function increases and the staffing of the learning laboratory poses a manpower problem.

Presently, it would not appear to be justifiable to add additional staff members purely because of the individualization of instruction. The need still exists at Becker Junior College for additional faculty

members to teach courses presently being taught by Adjunct faculty. In view of the results of the present study it is recommended that resources to individualized instruction which does not appear to be any more effective in student achievement.

Obviously, it would be ideal to allow students the option of choosing the instructional method, whether traditional or individualized. The reality of the situation is that Becker Junior College, being a private institution cannot afford this luxury at the present time. Therefore, it is recommended that any program of individualized instruction be carefully planned and discussed before making a committment of the college's resources.

Further Studies

Suggestions for further studies are made in several areas. Initially a study based on an entire semester of course in accounting principles content should be conducted. Secondly, a similar study should be undertaken whereby students majoring in accounting are included in the population rather than students exclusively from programs other than accounting.

Another study should be conducted whereby students' success in future accounting courses is monitored, especially those students entering intermediate accounting. The purpose of this study would be to determine the effect of individualized instruction the retention of accounting principles and concepts which are very important to success in these courses.

A study involving students enrolled in other courses where individualized

instruction is presently being planned should be conducted to determine the effectiveness of this method of instruction and possibly to point out areas in need of improvement.

Finally, it is suggested that the present study be replicated on several campuses in the near future. This would aid isolating the possible effect of instructor variations, which the present study did not include.

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APPENDIX

UNITS I-V

Learning Objectives

UNIT I

1. State at least four ways in which accounting helps business managers to make important decisions.
2. Analyze the financial effects of setting up a new business in terms of the property and property [illegible]s involved.
3. Record in equation form t[illegible]ancial effects of each transaction that you have previously learned to analyze.
4. Use an accounting equation to show how assets, liabilities, and owner's equity are related to one another.
5. Analyze the effects of business transactions on a firm's assets, liabilities, and owner's equity and record these effects in fundamental accounting equation form.
6. Show the results of business operations for a given period in the forms of an income statement.
7. Summarize the financial position of a business at any time in the form of a balance sheet.
8. Explain how the income statement and the balance sheet are related to each other.
9. Communicate business information orally and in writing using accounting terms correctly.

UNIT II

10. Set up T accounts for assets, liabilities, owner's equity, income, and expenses.
11. Analyze typical business transactions and enter them directly in the accounts affected.
12. Give the rules for recording debit and credit entries in each of the five types of accounts.
13. Develop an account numbering system and draw up a simple chart of accounts.
14. Prepare an income statement and balance sheet from ledger accounts.

UNIT III

15. Analyze transactions and record (or journalize) them in date (chronological) order in a book of original entry called the general journal.
16. Transfer accounting data from the general journal to the permanent accounting record by recording (or posting) them again in separate ledger accounts.
17. Arrange accounts in the ledger in a systematic manner.

UNIT IV

18. Determine the balance of a ledger account at the end of the fiscal period.

UNITS I-V (Continued)

19. Take a trial balance from the account balances in the ledger.
20. Enter the trial balance on a six-column worksheet.
21. Complete the worksheet.
22. Prepare an income statement and a balance sheet from the completed worksheet.

UNIT V

23. Journalize and post entries to transfer (or close) the income and expense balances into the Income and Expense Summary account.
24. Transfer (or close) the Income and Expense Summary account to the owner's investment account.
25. Balance and rule the accounts after the closing entries have been paid.
26. Prepare a postclosing trial balance.
27. Properly use dollar signs in the preparation of accounting statements.

ACCOUNTING QUESTIONNAIRE

The Department of Business Administration is interested in your opinion of this course. Your honest response to these questions will be valuable in evaluating the existing curriculum.

CIRCLE THE APPROPRIATE RESPONSE

1. Which of the following best describes your attitude towards the subject of accounting?

   A. Very Unfavorable
   B. Unfavorable
   C. Undecided
   D. Favorable
   E. Very Favorable

2. With respect to what you have learned in this course, how does accounting compare to other college courses?

   A. Very Unfavorably
   B. Unfavorably
   C. Undecided
   D. Favorably
   E. Very Favorably

3. How interested are you in taking another accounting course?

   A. Very Uninterested
   B. Uninterested
   C. Undecided
   D. Interested
   E. Very Interested

4. The material in accounting is dull and boring.

   A. Strongly Agree
   B. Agree
   C. Neutral
   D. Disagree
   E. Strongly Disagree

5. To me, accounting should prove to be a valuable course.

   A. Strongly Disagree
   B. Disagree
   C. Neutral
   D. Agree
   E. Strongly Agree

6. I would recommend this course to a friend.

   A. Strongly Disagree
   B. Disagree
   C. Neutral
   D. Agree
   E. Strongly Agree

7. To me, accounting is intellecturally stimulating.

   A. Strongly Disagree
   B. Disagree
   C. Neutral
   D. Agree
   E. Strongly Agree

8. What is your present attitude toward this course?

   A. Very Unfavorable
   B. Unfavorable
   C. Undecided
   D. Favorable
   E. Very Unfavorable

9. How interested are you in learning more about accounting?

   A. Very Uninterested
   B. Uninterested
   C. Undecided
   D. Interested
   E. Very Interested

10. I wish I were not required to take this course.

   A. Strongly Agree
   B. Agree
   C. Neutral
   D. Disagree
   E. Strongly Disagree

VITA

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